Remarks

I. Status of the Application and Claims

As originally filed, the present application had a total of 20 claims. These were cancelled in a Preliminary Amendment and new claims 21-45 were added. In the present response, claims 40 and 42-45 have been cancelled. Thus, the claims now pending are claims 21-39 and 41.

II. The Amendments

The only amendment that has been made is to incorporate the requirements of claim 40 into claim 21. This amendment does not add new matter to the application and its entry is therefore respectfully requested.

The Rejections

II. Rejection of Claims Under 35 U.S.C. § 102

On pages 2-3 of the Office Action, claims 21-25, 27-30, 35 and 41 are rejected under 35 USC §102 based upon the allegation that they are anticipated by US 5,663,340.

Since claim 40 was not included in this rejection and since the limitations of claim 40 have now been read into claim 21, it is respectfully submitted that the present rejection has been overcome for claim 21 and all claims directly or indirectly dependent on claim 21 (*i.e.*, all of the other claims pending in the application).

II. Rejection of Claims Under 35 U.S.C. 103

On pages 3-5 of the Office Action, claims 21-41 are rejected as obvious in light of US 5,663,340 in combination with US 6,552,913. The Examiner alleges that the '340 reference discloses the same reactions used by Applicants and that these reactions may be performed without added solvent. The '913 reference is cited as disclosing the use of Vilsmeyer reagents in reactions. The Examiner argues that differences in the temperature or concentration of a reaction are not generally sufficient to support patentability unless it can be shown that the concentration or temperature is critical.

Applicants respectfully traverse this rejection for the claims as amended herein.

The '340 reference discloses a process that requires three steps: a) cyclyzing an aminomalonic ester with guanidine or its salt in the presence of a base to produce 2,5-diamino-4,6-dihydroxypyrimidine or its salt; b) chlorinating this product with a chlorinating agent in the presence of an amide to produce a 4,6-dichloropyrimidime and c) reacting the 4,6-dichloropyrimidime with an aqueous solution of a carboxylic acid to produce the final product (see column 1 of '340, lines 44-54). It is only the last two steps that are directly relevant to Applicants' claims.

Step c) in '340 (see description above) corresponds to steps b) and c) in Applicants' claim 21.[1] However, there are substantial differences between the processes in this regard. The '340 reference has a single step in which 2-amino-4,6-dichloro-5-formamidopyrimidine is made by reacting a 4,6-dichloropyrimidime derivative in an aqueous carboxylic acid. In contrast, Applicants first react a 4,6-dichloropyrimidime derivative with water; then adjust the pH to between 1.0 and 6.0 with an inorganic base; and finally hydrolyze the product in the absence of an added solvent. Thus, Applicants have two aqueous incubation steps separated by an adjustment of pH with an inorganic base. The importance of the two incubations, pH adjustment and the absence of a solvent are discussed on page 7 of the application, lines 1-23. These read as follows:

> The pH [adjustment with inorganic base] is crucial, since it controls the selective reaction of B via C to D [see reaction steps on page 1 of the application]. In the case of incorrectly selected pH, a reduced yield and/or undesired by-products in the product are obtained. According to the invention, the pH is adjusted at a defined value in the range between pH 1.0 and 6.0, preferably from pH 2.0 to 5.0, more preferably from 3.0 to 4.0, the pH being measured by means of a glass electrode at a temperature of 20°C. If appropriate, the pH can be readjusted continuously in the course of the reaction which follows by adding further base under pH control.
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> The further reaction is carried out by heating the aqueous mixture to a temperature of from 70 to 120°C, preferably from 80 to 100°C. In the course of a reaction time of from 1 to 20 hours, the unisolated intermediates form the desired target product 2-amino-4,6-dichloro-5-formamidopyrimidine. This is insoluble in the reaction mixture and can be removed, washed and dried by means of process steps familiar to those skilled in the art.
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> It is considered to be essential to the invention that this last reaction step is effected in the absence - even of traces - of a solvent. This is because it has been found to be capable of starting to dissolve the water-insoluble 2-amino-4,6-

[1] Step b) in '340 corresponds to step a) in Applicants' claim 21.

dichloro-5-formamidopyrimidine in the reaction mixture, which makes the pyrimidine more vulnerable to a further hydrolysis, so that the ultimate result is reduced yields and/or contamination of the product with 2,5-diamino-4,6-dichloropyrimidine, the subsequent product of the hydrolysis.

In light of the above comments, it should be apparent that the differences between Applicants' process and that disclosed in the '340 reference are much more fundamental than a difference in reaction temperature or reactant concentration. There is nothing disclosed in the '340 reference by which one of skill in the art could arrive at the reaction steps claimed by Applicants. There is also nothing in the '913 reference that would make Applicants' final process steps any more obvious. It is therefore respectfully submit that the Examiner's rejection under 35 USC §103 cannot be validly maintained for the claims now pending.

Conclusion

In light of the considerations above, Applicants respectfully submit that all of the Examiner's rejections have been overcome. It is therefore requested that these rejections be withdrawn and that the claims presently pending in the application be allowed.

If, in the opinion of the Examiner, a phone call may help to expedite the prosecution of this application, the Examiner is invited to call Applicants' undersigned attorney at (240)683-6165.

Respectfully submitted,

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